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| 10/815,593 | 04/01/2004 | Steven K. Hansen | 180825.90166 | 9459 |

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| EXAMINER | |
|---|---|
| WRIGHT, KAINOA | |
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| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 03/28/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/815,593 | HANSEN ET AL. | |
| | Examiner | Art Unit | |
| | Kainoa BK Wright | 2861 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on *10 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-27 and 32-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27 and 32-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. The reply filed on 10 January 2007 has been entered.

2. The amendment to claim 17 is sufficient to overcome the previous informalities objection.

3. The amendment to claim 26 is sufficient to overcome the previous rejection under 35 USC 112, 2nd ¶.

### *Response to Arguments*

4. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Applicants outstanding argument regarding the validity of using the laser source of Kan for printing purposes is unpersuasive as it is the general state of knowledge in both the printing arts that lasers are commonly used in printing (or marking) applications. Hence, one of ordinary skill in the art would have looked to all lasers, including Kan, for a laser source to be used in printing.

### *Claim Objections*

5. Claim 33 objected to because of the following informalities: The claim is dependent on itself. Examiner assumes this is a typo and examination of the claim will be as if it depended from claim 32. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim recites the limitation whereby, "...a temperature feedback of the microlaser [is monitored] to maintain the microlaser at a predetermined power level while in the simmer mode." According to the totality of applicants disclosure, the temperature feedback is for maintaining the temperature of the laser to within a predetermined range. It is unclear how this constitutes maintaining the power level of the laser. The disclosure does not seem to mention any correlation between the temperature and maintaining a power level. However, examiner is aware of the general phenomenon whereby a laser power is changed according to a change in the temperature of the laser. It is assumed that applicant is referring to this occurrence and that by keeping the temperature substantially constant, the power level of the laser is maintained at a substantially constant level with respect to a certain operating voltage/current. It is under this assumption that the claim will be examined.

8. Claim 2 recites the limitation "said saturable absorber" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-4, 6-9 & 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149).

Regarding Claim 1: Chiba teaches a laser marking method and apparatus comprising: a laser pulse outputted from a source 1; the laser pulse being directed towards a target media 10 (Fig.1); and the laser power being such that a mark is formed on the target media 10 (Fig.2).

Chiba fails to teach the laser driven at a level at or beneath a saturation threshold (i.e. a simmer level). Chiba further fails to teach an increase in power to drive the laser above the threshold in order to emit a controlled laser pulse. Chiba further fails to teach the repetition of this cycle (i.e. a return of the laser power to the simmer level).

Kan teaches a laser driven at a level at or beneath a saturation threshold (i.e. a simmer level). Kan further teaches an increase in power to drive the laser above the threshold in order to emit a controlled laser pulse (Fig.2A-2E). Kan further teaches the repetition of this cycle [0044].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba to include the laser of Kan in order to provide a pulsed laser source for marking.

Chiba in view of Kan fails to teach monitoring a current, a voltage, and a temperature feedback of the laser to maintain the laser at a predetermined power level while in simmer mode.

Terai teaches a power level for a laser source being maintained by monitoring a voltage and a current (col.6, ll.45-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the power level monitoring and maintaining of Terai such that the simmer power level of the laser is maintained by the monitoring of the current and voltage in order to prevent the laser power from dropping too far below the saturation threshold or from going above the threshold prematurely.

Miguelez teaches monitoring temperature feedback to maintain temperature at a desired level, thus maintaining a desired power level (see above §112 Rejections), by teaching a cooling system 403 for monitoring and maintaining (i.e. cooling) the temperature at a desired level [0030], thus maintaining a desired power level (see above §112 Rejections).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the temperature monitoring and maintaining of Miguelez, such that the temperature of the laser was maintained at a

desired level, in order to keep the power (i.e. a simmer power level) of the laser constant with respect to a particular drive current/voltage.

Regarding Claim 2: Chiba further teaches directing the laser pulse along a path (Fig.1).

Chiba fails to teach the laser pulse being emitted from a saturable absorber.

Kan teaches the laser pulse L3 being emitted by a saturable absorber 22.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Chiba to include the further teachings of Kan. Motivation for this combination is found in the incorporation of the laser of Kan within the marking system of Chiba (see above). The saturable absorber is integral to and indistinguishable from the laser of Kan.

Regarding Claims 3 and 4: Chiba et al. further teaches directing the laser pulse with at least one mirror 4 (Fig.1) which is pivotally mounted (col.9, ll.11-16).

Regarding Claim 6: Chiba et al. further teaches feeding the target 10 into the path of the laser pulse (col.11, ll.45-46).

Regarding Claims 7 and 8: Chiba further fails to teach a saturation hold level of at least 50% of the saturation threshold, and the saturation hold level being at least 90% of the saturation threshold.

Kan et al. provides for the laser medium to be in a saturated state at or below a predetermined value. This value is arbitrary and can be the threshold of the medium or any percentage of it. It is clear from the Figures 2A-2E, that Kan et al. provides for a hold level of at least 50% of TH (or the threshold). It is also evident in Fig 2D, that the

curve corresponding to the holding level is asymptotically approaching TH and thereby would constitute a hold level of at least 90% of TH.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Chiba to include the further teachings of Kan. Motivation for this combination is found in the incorporation of the laser of Kan within the marking system of Chiba (see above). The hold level is integral to and indistinguishable from the laser of Kan.

Regarding Claim 9: Chiba further fails to teach the laser being passively Q-switched.

Kan et al. teaches the laser being passively Q-switched [0005] & [0026].

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Chiba to include the further teachings of Kan. Motivation for this combination is found in the incorporation of the laser of Kan within the marking system of Chiba (see above). The Q-switch is integral to and indistinguishable from the laser of Kan.

Regarding Claim 32: See above Regarding Claim 1 for general meeting of limitations. The only difference in the claimed limitations is the repetition of the steps of driving the laser at a simmer level and monitoring the current, voltage, and temperature feedback to maintain the laser at a predetermined power level until a command is received to form a mark. This limitation is inherent in the combination of Chiba in view of Kan and further in view of Miguelez and Terai (CKMT). CKMT maintains a power level of a laser at a predetermined power level (i.e. simmer level) by monitoring the

current, voltage and temperature. This process is necessarily a continuous process (i.e. the steps are continually repeated) in order to maintain the saturation level of the laser below the saturation threshold and prevent lasing. Thus, at any two consecutive instances of time, the process is repeated until a command (i.e. increase in drive current) is given emit a pulse, at which point the step of increasing the power level (i.e. lasing) is performed.

Regarding Claim 33: See above Regarding Claim 1

11. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) as applied to claim 1 above, and still further in view of Miyagawa et al. (US 6688724).

Chiba in view of Kan and further in view of Miguelez and Terai et al. (CKMT) teaches a pulsed laser marking system wherein a current, voltage and temperature is monitored to maintain a laser at a simmer power level; the power is increased to effect the laser to emit a laser pulse; and the laser power is returned to the simmer level; wherein the laser pulse is directed towards a medium in order to create a mark in the medium.

CKMT fails to teach directing the pulse of light through a fiber optic material.

Miyagawa teaches directing light from a laser light source (col.5, ll.36-47) through a fiber optic guide 28 to mark a target media 42 (Fig.2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMT to include the fiber optic guide of Miyagawa in order to provide a pulse directing means having a greater range of motion.

12. Claims 10, 13-16 & 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605).

Regarding Claim 10: Chiba teaches a laser marking method and apparatus comprising: a laser pulse outputted from a source 1; the laser pulse being directed towards a target media 10 (Fig.1); and the laser power being such that a mark is formed on the target media 10 (Fig.2).

Chiba fails to teach the laser driven at a level at or beneath a saturation threshold (i.e. a simmer level). Chiba further fails to teach an increase in power to drive the laser above the threshold in order to emit a controlled laser pulse. Chiba further fails to teach the repetition of this cycle (i.e. a return of the laser power to the simmer level).

Kan teaches a passively Q-switched laser having saturable absorber 22 being driven at a level at or beneath a saturation threshold (i.e. a simmer level) (abstract). Kan further teaches an increase in power to drive the laser above the threshold in order to emit a controlled laser pulse (Fig.2A-2E). Kan further teaches the repetition of this cycle [0044].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba to include the laser of Kan in order to provide a pulsed laser source for marking.

Chiba in view of Kan fails to teach monitoring a current, a voltage, and a temperature feedback of the laser to maintain the laser at a predetermined power level while in simmer mode.

Terai teaches a power level for a laser source being maintained by monitoring a voltage and a current (col.6, ll.45-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the power level monitoring and maintaining of Terai such that the simmer power level of the laser is maintained by the monitoring of the current and voltage in order to prevent the laser power from dropping too far below the saturation threshold or from going above the threshold prematurely.

Miguelez teaches a cooling system 403 monitoring and maintaining (i.e. cooling) the temperature at a desired level [0030], thus maintaining a desired power level (see above §112 Rejections).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the temperature monitoring and maintaining of Miguelez, such that the temperature of the laser was maintained at a desired level, in order to keep the power (i.e. a simmer power level) of the laser constant with respect to a particular drive current/voltage.

Chiba in view of Kan fails to teach a photodiode to provide feedback when the laser is activated to monitor the repetition rate of the laser.

Richardson teaches the use of a fast photodiode to monitor the repetition rate of a pulsed laser in order to control the fire timing [0110].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the repetition rate monitoring technique of Richardson in order to provide a means for verifying and adjusting a pulse fire timing.

Regarding Claims 13-14: Chiba further teaches a guidance means for directing light from a laser light source 1 to mark a target media 10 (Fig.1), wherein the guidance means comprises at least one mirror 4 which is pivotally mounted.

Regarding Claim 15: Chiba further teaches feeding the target 10 into the path of the laser pulse (col.11, ll.45-46).

Regarding Claim 16: Chiba further teaches a platen supporting the target 10 in the path of the light pulse (Fig.1).

Regarding Claims 23-24: Chiba further fails to teach a saturation hold level of at least 50% of the saturation threshold, and the saturation hold level being at least 90% of the saturation threshold.

Kan et al. provides for the laser medium to be in a saturated state at or below a predetermined value. This value is arbitrary and can be the threshold of the medium or any percentage of it. It is clear from the Figures 2A-2E, that Kan et al. provides for a hold level of at least 50% of TH (or the threshold). It is also evident in Fig 2D, that the

curve corresponding to the holding level is asymptotically approaching TH and thereby would constitute a hold level of at least 90% of TH.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Chiba to include the further teachings of Kan. Motivation for this combination is found in the incorporation of the laser of Kan within the marking system of Chiba (see above). The hold level is integral to and indistinguishable from the laser of Kan.

Regarding Claims 25-26: Chiba in view of Kan fails to teach control circuitry capable of monitoring and controlling a temperature of the laser, via a cooling system, by employing a PID loop to maintain the temperature near a desired temperature.

Miguelez et al. teaches control circuitry capable of monitoring and controlling a temperature of a laser, via a cooling system, by using a PID in order to keep the laser within a desired level [0030].

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Chiba in view of Kan to include the further teachings of Miguelez. Motivation for this combination is found in the incorporation of the cooling system of Miguelez into the marking system of Chiba in view of Kan (see above). Control circuitry comprising a PID and operable to maintain a temperature through a cooling system is integral to and indistinguishable from the temperature monitoring and maintaining means of Miguelez.

Regarding Claim 27: See above Regarding Claim 10.

13. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605) as applied to claim 10 above, and further in view of Miyagawa et al. (US6688724).

Chiba in view of Kan and further in view of Miguelez and Terai and Richardson (CKMTR) teaches a marking apparatus having a passively Q-switched laser which emits a laser light pulse upon reaching a saturation threshold. CKMTR further teaches control circuitry operable to monitor a current, a voltage, and a temperature to maintain the laser below the saturation threshold when not marking and to drive the laser above the saturation threshold when a mark is required. CKMTR further teaches a cooling system to cool the laser, a photodiode to monitor the repetition rate of the laser, and a guidance system to direct the emitted light pulse along a path towards a target.

CKMTR fails to teach the guidance system to be flexible fiber optic material having an input end which receives light and an output end through which light exits. CKMTR further fails to teach the output end being mounted to a moveable carriage disposed adjacent the target.

Miyagawa teaches a guidance means for directing light from a laser light source (col.5, ll.36-47) through a fiber optic guide 28 to mark a target media 42 (Fig.2), wherein the fiber optics have an input end receiving the light and an output end through which the light exits, the output end being mounted to a movable carriage 10 (column 5, lines 15-17).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMTR to include the fiber optic guide of Miyagawa in order to provide a pulse directing means having a greater range of motion.

14. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605) as applied to claim 10 above, and further in view of Ohba (US 6559880).

Chiba in view of Kan and further in view of Miguelez and Terai and Richardson (CKMTR) teaches a marking apparatus having a passively Q-switched laser which emits a laser light pulse upon reaching a saturation threshold. CKMTR further teaches control circuitry operable to monitor a current, a voltage, and a temperature to maintain the laser below the saturation threshold when not marking and to drive the laser above the saturation threshold when a mark is required. CKMTR further teaches a cooling system to cool the laser, a photodiode to monitor the repetition rate of the laser, and a guidance system to direct the emitted light pulse along a path towards a target. CKMTR further teaches feeding a target media, supported on a platen, into the marking area (see above regarding claim 16).

CKMTR fails to teach at least one of the platen and the guidance means being movable to vary the distance between the platen and the guidance means.

Ohba teaches a laser marking system having a guidance means 126 capable of guiding laser light onto a target media 12. Ohba further teaches the target fed into the laser path by a feed assembly as, platen 54 supporting the target 12. Ohba further teaches the distance between the feed assembly and the guidance means 126 to be adjustable by movement of the guidance means via moving the exposure head 92 (col. 9, ll.39-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMTR to include the distance adjusting means of Ohba in order to provide a means of adjusting the focus and/or intensity of the laser pulse on the target.

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605) as applied to claim 10 above, and further in view of Kitai et al.(US 5990596).

Chiba in view of Kan and further in view of Miguelez and Terai and Richardson (CKMTR) teaches a marking apparatus having a passively Q-switched laser which emits a laser light pulse upon reaching a saturation threshold. CKMTR further teaches control circuitry operable to monitor a current, a voltage, and a temperature to maintain the laser below the saturation threshold when not marking and to drive the laser above the saturation threshold when a mark is required. CKMTR further teaches a cooling

system to cool the laser, a photodiode to monitor the repetition rate of the laser, and a guidance system to direct the emitted light pulse along a path towards a target.

CKMTR fails to teach a guidance system including a carriage movable relative to an optical output, wherein the carriage supports a structure to direct a pulse of light towards a target media.

Kitai teaches a guidance means for directing light from a laser light source 305 towards a target media 9c wherein the guidance means comprises an optical head 301 (i.e. carriage) movable relative to an optical output, the carriage supporting a structure 303 to direct light towards the media (Figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMTR to include the moveable optical head of Kitai in order to provide the marking system with an additional dimension of freedom.

16. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605) as applied to claim 10 above, and further in view of Corbett (US 6113992).

Chiba in view of Kan and further in view of Miguelez and Terai and Richardson (CKMTR) teaches a marking apparatus having a passively Q-switched laser which emits a laser light pulse upon reaching a saturation threshold. CKMTR further teaches control circuitry operable to monitor a current, a voltage, and a temperature to maintain

the laser below the saturation threshold when not marking and to drive the laser above the saturation threshold when a mark is required. CKMTR further teaches a cooling system to cool the laser, a photodiode to monitor the repetition rate of the laser, and a guidance system to direct the emitted light pulse along a path towards a target.

CKMTR fails to teach a platform having at least one degree of freedom, the platform supporting the target.

Corbett teaches target 12 on platform 11, the platform having at least one degree of freedom being along the axis of the guide 14.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMTR to include the movable platform for supporting the target in order to provide an assembly line type situation in which successive targets art marked and moved.

17. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) and Richardson (US 2003/0156605) as applied to claim 10 above, and further in view of Endo (US 6030133).

Chiba in view of Kan and further in view of Miguelez and Terai and Richardson (CKMTR) teaches a marking apparatus having a passively Q-switched laser which emits a laser light pulse upon reaching a saturation threshold. CKMTR further teaches control circuitry operable to monitor a current, a voltage, and a temperature to maintain

the laser below the saturation threshold when not marking and to drive the laser above the saturation threshold when a mark is required. CKMTR further teaches a cooling system to cool the laser, a photodiode to monitor the repetition rate of the laser, and a guidance system to direct the emitted light pulse along a path towards a target.

CKMTR fails to teach the control circuitry for controlling the laser disposed in an electrical enclosure separate from a printing enclosure housing the guidance mechanism. CKMTR further fails to teach the enclosures sharing a common wall.

Endo teaches a control circuit board 92 for controlling printing to be housed within a separate housing than the printing means (col.5, ll.55-65) and that they share a common wall, that wall being the bottom of the printer housing. Endo further teaches that the printing means be a laser type printing (col.6, ll.55-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify CKMTR to include the dual enclosure setup of Endo in order to provide for a removable and/or replaceable printing means from a common control circuitry, as suggested by Endo, and/or to prevent the control circuitry from being effected by the heat generated by the laser, thus preventing circuit failure.

18. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba et al. (US 6144397) in view of Kan et al. (US 2003/0138005) and further in view of Miguelez et al. (US 2003/0063637) and Terai et al. (US 5295149) as applied to claim 33 above, and still further in view of Richardson et al. (US 2003/0156605).

Chiba in view of Kan and further in view of Miguelez and Terai et al. (CKMT) teaches a pulsed laser marking system wherein a current, voltage and temperature is monitored to maintain a laser at a simmer power level; the power is increased to effect the laser to emit a laser pulse; and the laser power is returned to the simmer level; wherein the laser pulse is directed towards a medium in order to create a mark in the medium; and wherein the driving of the laser at the simmer level and monitoring and maintaining the laser at the simmer level steps are repeated until a pulse is required.

CKMT fails to teach monitoring a number of pulses applied to form the mark.

Richardson teaches the use of a fast photodiode to monitor the repetition rate of a pulsed laser [0110].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiba in view of Kan to include the repetition rate monitoring technique of Richardson in order to provide a means for verifying and adjusting a pulse fire timing.

***Conclusion***

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kainoa BK Wright whose telephone number is (571) 272-5102. The examiner can normally be reached on M-F 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAI
3/22/07

HAI PHAM
PRIMARY EXAMINER